REMARKS

Applicants respectfully request that the application be reconsidered in view of the above amendments and the following remarks. In the Office Action, dated July 29, 2005, the Examiner objected to claim 7 as containing an informality. The Examiner rejected claims 1-10 and 16-20 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent Application No. 10/754,540, over claims 8-19 of U.S. Patent No. 6,855,989 and over claims 1-19 of U.S. Patent No. 6,855,583. The Examiner additionally rejected claims 1, 5, 6 and 16 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,406,951 (hereinafter "YU 1"). The Examiner further rejected claims 1-4, 7-10 and 16-20 under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,764,884 (hereinafter "YU 2").

By way of this amendment, claims 1, 2, 7, 16 and 17 have been amended to improve form. Claims 5 and 11-15 have been canceled without prejudice or disclaimer. New claims 21 and 22 have been added. No new matter has been added by way of the present amendment. Reconsideration of the outstanding rejections is respectfully requested in view of the amendments above and the following remarks.

On page 2, the Office Action objects to claim 7 as containing the term "crystalline." This term has been removed from claim 7. In view of this amendment, Applicants request that the objection to claim 7 be withdrawn.

On page 3, the Office Action rejects claims 1-10 and 16-20 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent Application No. 10/754,540. Applicants submit herewith a terminal disclaimer

in compliance with 37 C.F.R. § 1.321. In view of this terminal disclaimer, Applicants request withdrawal of this rejection.

On page 4, the Office Action rejects claims 1-10 and 16-20 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 8-19 of U.S. Patent No. 6,855,989. Applicants respectfully submit that independent claims 1 and 16, as amended, patentably distinguish over claims 8-19 of U.S. Patent No. 6,855,989. Independent claim 1 recites "forming a fin," "forming a source region adjacent a first end of the fin and a drain region adjacent a second end of the fin," "forming an oxide cap over upper surfaces of the fin, source region, and drain region," "forming a layer of sacrificial oxide on the fin, source region and drain region after formation of the oxide cap," "removing the layer of sacrificial oxide to remove defects from surfaces of the fin," "forming a dummy gate comprising a first material in a first pattern over the fin," "forming a dielectric layer adjacent sides of the dummy gate," "removing the first material to form a trench in the dielectric layer corresponding to the first pattern," "forming a layer of gate insulation on the surfaces of the fin exposed within the trench" and "forming a metal gate in the trench over the layer of gate insulation." Claim 8 of U.S. Patent No. 6,855,989 recites "forming a fin," "forming a source region adjacent a first end of the fin and a drain region adjacent a second end of the fin," "forming a dummy gate comprising a first material in a first pattern over the fin," "forming a dielectric layer adjacent sides of the dummy gate," "removing the first material to form a trench in the dielectric layer corresponding to the first pattern," "forming a first metal gate layer in the trench, wherein the first metal gate layer comprises a first metal material" and "forming a second metal gate layer in the trench adjacent the first metal gate layer, wherein the second metal gate layer comprises a second metal material and wherein the second metal

material selectively diffuses through the first metal material via metal interdiffusion to produce a multiple voltage threshold FinFET." Claim 15 of U.S. Patent No. 6,855,583 recites "forming a dummy oxide layer over the fin," "depositing a layer of first material over the fin and dummy oxide layer," "etching the layer of the first material to form a dummy gate in a first pattern," "depositing a dielectric layer over the dummy gate and source and drain regions," "planarizing the dielectric layer to expose a top surface of the dummy gate," "removing the first material to form a trench in the dielectric layer corresponding to the first pattern," "forming a gate insulation layer in the trench," "forming a first gate layer in the trench, the first gate layer comprising a first metal material, wherein the first metal material comprises a first work function" and "forming a second gate layer in the trench, the second gate layer comprising a second metal material, wherein the second metal material comprises a second work function." Claim 1 of the present application, therefore, includes numerous features, such as, for example, "forming an oxide cap over upper surfaces of the fin, source region, and drain region," "forming a layer of sacrificial oxide on the fin, source region and drain region after formation of the oxide cap" and "removing the layer of sacrificial oxide to remove defects from surfaces of the fin," that patentably distinguish claim 1 of the present application over claims 8 and 15 of U.S. Patent No. 6,855,989. Since amended claim 1 patentably distinguishes over the claims of U.S. Patent No. 6,855,989, Applicants respectfully request withdrawal of this obviousness-type double patenting rejection. Independent claim 16 of the present application, though of different scope than claim 1, recites similar features to those noted above with respect to claim 1. Withdrawal of the obviousness-type double patenting rejection of claim 16 is requested for similar reasons to those set forth above with respect to claim 1.

On page 4, the Office Action rejects claims 1-10 and 16-20 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,855,583. Applicants respectfully submit that independent claims 1 and 16, as amended, patentably distinguish over claims 1-19 of U.S. Patent No. 6,855,583. Independent claim 1 of U.S. Patent No. 6,855,583 recites "forming a mesa on a silicon-on-insulator wafer," "forming a dummy gate with a first material in a first pattern over the mesa," "forming a first dielectric layer around the dummy gate," "removing the first material to create a trench shaped in the first pattern," "forming a mask over a portion of the trench and the mesa," "etching a portion of the mesa that is exposed within the trench to form a fin," "forming a gate dielectric layer over the fin," "forming a gate within the trench over the gate dielectric layer" and "removing the first dielectric layer." Independent claim 15 of U.S. Patent No. 6,855,583 recites "forming an oxide layer over a silicon-on-insulator wafer comprising a silicon layer," "etching the silicon and oxide layers using a rectangular mask to form a mesa," "etching a portion of the mesa using a second mask to form a fin, wherein the etching a portion of the mesa includes: etching a portion of the mesa in a channel region of the tri-gate fin field effect transistor," "forming a gate dielectric layer over the fin," and "forming a tri-gate over the fin and the gate dielectric layer." As is apparent from the recitation of the features of claim 1 of the present application above, claim 1 includes numerous features, such as, for example, "forming an oxide cap over upper surfaces of the fin, source region, and drain region," "forming a layer of sacrificial oxide on the fin, source region and drain region after formation of the oxide cap" and "removing the layer of sacrificial oxide to remove defects from surfaces of the fin," that patentably distinguish claim 1 over claims 1 and 15 of U.S. Patent No. 6,855,583. Since amended claim 1 patentably

distinguishes over the claims of U.S. Patent No. 6,855,583, Applicants respectfully request withdrawal of this obviousness-type double patenting rejection. Independent claim 16 of the present application, though of different scope than claim 1, recites similar features to those noted above with respect to claim 1. Withdrawal of the obviousness-type double patenting rejection of claim 16 is requested for similar reasons to those set forth above with respect to claim 1.

On page 5, the Office Action rejects pending claims 1, 6 and 16 under 35 U.S.C. § 102(b) as allegedly being anticipated by YU 1. Applicants respectfully traverse.

A proper rejection under 35 U.S.C. § 102 requires that a reference teach every aspect of the claimed invention. See M.P.E.P. § 2131. YU 1 does not disclose or suggest the combination of features recited in Applicants' claim 1. For example, YU 1 does not disclose or suggest, among other features, "forming a dummy gate comprising a first material in a first pattern of the fin," "forming a dielectric layer adjacent sides of the dummy gate" and "removing the first material to form a trench in the dielectric layer corresponding to the first pattern."

YU 1 discloses the formation of an insulating block 214 over a semiconductor island 216 (column 4, lines 31-42; FIG. 6) using a masking structure 210. Semiconductor material is then grown adjacent to the insulating block 214 to form a raised drain structure 222 and a raised source structure 224 (column 4, line 59 – column 5, line 3; FIG. 7). Subsequent to formation of drain structure 222 and source structure 224, insulating block 214 is etched away to form a block opening 226 (column 5, lines 24-29; FIG. 9). A gate structure 234 is then formed in block opening 226 (column 5, lines 61-66; FIG. 13). YU 1, therefore, discloses the formation of drain and source structures comprising *semiconductor material*

adjacent sides of an insulating block 214, and does not disclose the formation of a dielectric layer adjacent the insulating block 214 and the formation of a trench in the dielectric layer. YU 1, thus, does not disclose or suggest "forming a dielectric layer adjacent sides of the dummy gate" and "removing the first material to form a trench in the dielectric layer corresponding to the first pattern," as recited in amended claim 1.

For at least the foregoing reasons, Applicants submit that claim 1 is not anticipated by YU 1.

Claim 6 depends from claim 1 and, therefore, patentably distinguishes over YU 1 for at least the reasons set forth above with respect to claim 1.

Independent claim 16 recites, among other features, "forming a dummy oxide layer over the fin," "depositing a layer of first material over the fin and dummy oxide layer," "etching the layer of the first material to form a dummy gate in a first pattern," "depositing a dielectric layer over the dummy gate and source and drain regions," "planarizing the dielectric layer to expose a top surface of the dummy gate" and "removing the first material to form a trench in the dielectric layer corresponding to the first pattern." As discussed above with respect to claim 1, YU 1 discloses the formation of a drain and source structure comprising *semiconductor material* adjacent sides of an insulating block 214, and does not disclose the formation of a dielectric layer adjacent the insulating block 214 and the formation of a trench in the dielectric layer. YU 1, therefore, does not disclose, or even suggest, "depositing a dielectric layer over the dummy gate and source and drain regions," and "removing the first material to form a trench in the dielectric layer corresponding to the first pattern," as recited in claim 16. For at least the foregoing reasons, Applicants submit that claim 16 is not anticipated by YU 1.

On page 6, the Office Action rejects claims 1-4, 7-10 and 16-20 under 35 U.S.C. § 102(e) as allegedly being anticipated by YU 2. Applicants respectfully traverse and submit that YU 2 does not disclose or suggest the combination of features recited in Applicants' amended claim 1.

YU 2 discloses the formation of a dummy gate 300 over a fin 210 and the subsequent formation of a dielectric layer 610 over the dummy gate 300 (column 4, lines 18 – 35; column 4, lines 59-67; FIG. 3A). YU 2 further discloses removal of dummy gate 300 to form a gate recess 810, and the formation of a gate material 1010 within gate recess 810 (column 5, lines 18-22; column 6, lines 1-17; FIGS. 8 & 10B). YU 2, however, does not disclose or suggest, among other features, "forming a layer of sacrificial oxide on the fin, source region and drain region after formation of the oxide cap" and "removing the layer of sacrificial oxide to remove defects from surfaces of the fin." YU 2 further does not disclose or suggest, among other features, "forming a layer of gate insulation on the surfaces of the fin exposed within the trench" and "forming a metal gate in the trench over the layer of gate insulation." Since YU 2 does disclose each and every feature of amended claim 1, Applicants respectfully request withdrawal of the rejection of claim 1 under 35 U.S.C. § 102.

Claims 2-4 and 7-10 depend from claim 1 and, therefore, patentably distinguish over YU 2 for at least the reasons set forth above with respect to claim 1.

Amended independent claim 16 recites similar features to those discussed above with respect to claim 1. For example, claim 16 recites, among other features, "forming a layer of sacrificial oxide on the fin, source region and drain region after formation of the oxide cap" and "removing the layer of sacrificial oxide to remove defects from surfaces of the fin." Claim 16 further recites, among other features, "forming a gate insulation layer in the trench

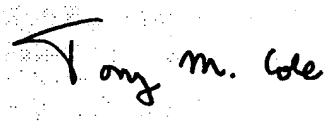
on the surfaces of the fin exposed within the trench" and "forming a metal gate in the trench over the gate insulation layer." As discussed above with respect to claim 1, YU 2 does not disclose or suggest these features. Withdrawal of the rejection of claim 16 under 35 U.S.C. § 102 is, therefore, respectfully requested.

Claims 17-20 depend from claim 16 and, therefore, patentably distinguish over YU 2 for at least the reasons set forth above with respect to claim 16.

New claims 21 and 22 depend from claim 1. These claims, therefore, patentably distinguish over YU 1 and YU 2 for at least the reasons set forth above with respect to claim 1.

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of this application, and the timely allowance of the pending claims. To the extent necessary, a petition for an extension of time under 37 CFR § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,



By: _____
Tony M. Cole
Registration No. 43,417

Date: October 27, 2005

Harrity & Snyder, L.L.P.
11240 Waples Mill Road
Suite 300
Fairfax, Virginia 22030
Main: (571) 432-0800
Direct: (386) 575-2713

Customer Number: **45114**